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REMARKS/ARGUMENTS

Status of Claims

Claims 1 to 15 remain in the application. Claims 16 to 30 are cancelled.

Claim Amendments

Claim 9 has been amended to recite a computer readable medium encode with computer executable instructions, in order to overcome the Examiner's rejection under 35 U.S.C. §101, as established below.

35 U.S.C. § 101 Claim Rejections

In paragraph 1 of the Office Action, the Examiner rejects claim 9 under 35 U.S.C. § 101, for allegedly "failing to provide any structural and functional interrelationships between the program and other claimed elements of the computer, which would permit the functionality of the program to be realized". Applicant respectfully submits that claim 9, as currently amended, clearly provides structural and functional interrelationships between the recited method steps and a computer that would permit the functionality of the method steps to be realized. Specifically, the preamble of claim 9 has been amended, as suggested by the Examiner, to recite:

> "An article of manufacture comprising a computer-readable storage medium encoded with computer executable instructions for:" (emphasis added)

As claim 9 has been amended according to the Examiner's suggestion, Applicant respectfully requests that the Examiner withdraw the rejection of claim 9 under 35 U.S.C. § 101.

35 U.S.C. § 103 Claim Rejections

In paragraph 4 of the Office Action, the Examiner rejects claims 1-15 under 35 U.S.C. § 103(a) as being unpatentable over Ramos et al. (U.S. Patent No. 7,072,663) in view of Balachandran et al. (U.S. Patent No. 6,996,083), and further in view of Kogiantis et al. (U.S.

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Patent Application Publication no. US 2003/0050074 A1).. Applicant respectfully traverses the rejection for reasons stated below.

The law on obviousness under 35 U.S.C. 103 was recently addressed in *KSR Int'l v. Teleflex, Inc.*, *No. 04-1350, slip op. at 14 (U.S., Apr. 30, 2007)*. Following this, examination guidelines were released on October 10, 2007 in regards to determining obviousness under 35 U.S.C. 103. According to these guidelines, the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co. 383 U.S. 1,148 USPQ 459 (1966)*. Obviousness is a question of law based on underlying factual inquiries. The factual inquiries enunciated by the Court are as follows:

(1) Determining the scope and content of the prior art;

(2) Ascertaining the differences between the claimed invention and the prior art; and

(3) Resolving the level of ordinary skill in the pertinent art.

The Graham factors, including secondary considerations when present, are the controlling inquiries in any obviousness analysis. Once the findings of fact are articulated, Office personnel must provide an explanation to support an obviousness rejection under 35 U.S.C. 103. According to KSR, for the Patent Office to properly combine references in support of an obviousness rejection, the Patent Office must identify a reason why a person of ordinary skill in the art would have sought to combine the respective teachings of the applied references.

Applicant's analysis below demonstrates that the Examiner has failed to properly conform to the aforementioned guidelines for a finding of obviousness under 35 U.S.C. 103.

Claim 1

Applicant submits that claim 1 of the present application is patentable over Ramos, Balachandran and Kogiantis, as the findings of fact as articulated by the Examiner are inaccurate. In particular, the Examiner has not properly determined (i) the scope of the prior art nor (ii) the differences between the claimed invention and the prior art. Furthermore, the Examiner has not provided a valid explanation to support an obviousness rejection under 35

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U.S.C. 103. Applicant's reasoning is detailed below.

Determining The Scope Of The Prior Art

Ramos

The Examiner concedes that Ramos does not explicitly disclose a prioritization algorithm that separates candidate base stations into uplink and downlink candidate sets. Applicant agrees with this assessment of Ramos.

Balachandran

The Examiner has pointed to column 8, lines 15 to 29 of Balachandran in support of the assertion that "Balachandran teaches the dynamic allocation of available resources of [sic] in the uplink and downlink direction independently" (emphasis added). However, the Examiner fails to recognize that Balachandran is directed to the dynamic allocation of channels at the base station level as either unidirectional uplink channels or unidirectional downlink channels, i.e., allocating channels on an individual base station as either uplink or downlink channels. See for example, Figure 1 and column 2, lines 36 to 44, which details the burst based access and assignment (BBAA) system and method to facilitate fast allocation and de-allocation of traffic and control channels to both real-time users and non-real-time users that are sharing the same wireless data communication resources, i.e. the channels of a common base station.

Kogiantis

The Examiner argues that Kogiantis discloses a method of scheduling a plurality of subscriber equipment based on sets of channel conditions for uplink and downlink channels. The Examiner points to paragraphs 25 to 27 of Kogiantis as having disclosed a scheduler that receives measured characteristics of uplink and downlink signals for a particular subscriber, and then schedules one or multiple subscribers to convey information over the uplink or downlink channels based on sets of channel conditions (uplink and/or downlink) associated with the subscribers. Applicant agrees with the Examiner up to this point; Kogiantis is directed to a channel allocation scheduler and a method for channel allocation scheduling at the base station

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level that are based on measured characteristic values of the base stations uplink and downlink channels. However, the Examiner goes on to include, in brackets:

"(determining the predominant direction of traffic with respect to the terminal)"

The subject matter in brackets is neither disclosed in Kogiantis, nor does it logically follow from the preceding narrative. It is respectfully submitted that "measuring characteristic values" of uplink signals at the base station and receiving "sets of downlink channel conditions received over the uplink signalling channel from the subscriber equipment", have nothing to do with determining the predominant direction of traffic with respect to the subscriber equipment (terminal). Rather, they have to do with the quality of the uplink and downlink channels.

Nothing in Kogiantis suggests "determining the predominant direction of traffic <u>with respect to the terminal</u>" (emphasis added). While Kogiantis may disclose that the scheduler can "schedule a set of subscribers having a higher downlink information rate than any other set of subscriber equipment requesting access ...[and] schedules another set of subscribers having a higher uplink information rate than any other set of subscriber equipment" (see column 27), this cannot be construed as "determining the predominant direction of traffic with respect to the terminal". Kogiantis merely describes channel allocation scheduling that preferentially schedules a particular set of subscribers whose aggregate information rate is highest.

Ascertaining The Differences Between The Prior Art And The Claims At Issue

Independent claim 1 recites:

1.   A method of selecting at least one base station for communicating with a terminal in a wireless communication system, comprising the steps of:

        storing an uplink candidate set listing at least one candidate uplink base station;

        storing a downlink candidate set listing at least one candidate downlink base station;

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determining a predominant direction of traffic with respect to the terminal;

if the predominant direction of traffic is in an uplink direction, selecting at least one optimum base station from the uplink candidate set; and

if the predominant direction of traffic is in a downlink direction, selecting at least one optimum base station from the downlink candidate set.

Ramos

As noted above, the Examiner concedes that Ramos does not explicitly disclose a prioritization algorithm that separates candidate base stations into uplink and downlink candidate sets. Ramos teaches only one candidate list, because Ramos is strictly directed to establishing a compromise between uplink and downlink performance. Accordingly, Ramos teaches away from maintaining separate lists, as clearly a compromise between uplink and downlink performance, which is the entire objective of Ramos, is not possible with two separate base station candidate lists for the uplink and the downlink. See, for example, col. 7, lines 15 to 32, which describe a prioritization scheme in which each cell is given a single weight based on the compromise between uplink and downlink performance.

Balachandran

The Examiner has pointed to column 8, lines 15 to 29 of Balachandran in support of the rejection of independent claim 1, alleging that "Balachandran teaches the dynamic allocation of available resources of [sic] in the uplink and downlink direction independently" (emphasis added). The Examiner goes on to state that "[t]herefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the prioritization algorithm of Ramos, to follow the teachings of Balachandran and break up downlink and uplink candidate cells in order to maximize the resource pool available for assignment when new data or speech becomes available for transmission" (emphasis added). As noted above, Balachandran is directed to the dynamic allocation of channels at the base station level as either unidirectional uplink channels or unidirectional downlink channels, i.e., allocating channels on an individual base station as either uplink or downlink channels.

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In contrast, the method recited in claim 1 is directed to a method of selecting at least one base station for communicating with a terminal in a wireless communication system. Balachandran is simply directed to separate burst based allocation of the channels of a single base station as either uplink or downlink channels, as opposed to conventional block based channel allocation on the downlink. Balachandran is entirely silent with respect to maintaining separate uplink and downlink base station candidate sets, as recited in claim 1. Applicant respectfully submits that one skilled in the art would not find any teaching in Balachandran that would suggest modifying the prioritization algorithm of Ramos to include separate uplink and downlink base station candidate sets, as Balachandran is strictly related to channel allocation, not selecting at least one base station for communicating with a terminal in a wireless communication system, as recited in claim 1.

Kogiantis

The Examiner acknowledges that the combination of Ramos and Balachandran does not explicitly teach or disclose determining a predominant uplink or downlink direction of traffic with respect to the terminal and selecting at least one optimum base station in the uplink candidate set or downlink candidate set based on the determination. The Examiner argues that Kogiantis discloses a method of scheduling a plurality of subscriber equipment based on sets of channel conditions for uplink and downlink channels. Kogiantis is directed to a channel allocation scheduler and a method for channel allocation scheduling at the base station level that are based on measured characteristic values of the base stations uplink and downlink channels. However, as noted above the Examiner's assertion that Kogiantis discloses "determining the predominant direction of traffic with respect to the terminal" is factually incorrect, as this feature is neither disclosed in Kogiantis, nor could it be logically inferred from Kogiantis. This is obviously an important step in claim 1, since, having determined the predominant direction, one candidate set or the other is used to perform base station selection.

It is respectfully submitted that "measuring characteristic values" of uplink signals at the base station and receiving "sets of downlink channel conditions received over the uplink signalling channel from the subscriber equipment", have nothing to do with determining the predominant direction of traffic with respect to the subscriber equipment (terminal). Rather, they

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have to do with the quality of the uplink and downlink channels. The quality of the uplink and
downlink channels may very well be considered in determining the uplink and downlink base
station candidate sets of Applicant's claim 1. However, nothing in Kogiantis suggests the
claimed step of "determining the predominant direction of traffic with respect to the terminal"
(emphasis added). According to claim 1, the predominant direction of traffic with respect to a
terminal is determined, and at least one optimum base station from either the uplink candidate set
or the downlink candidate set is selected based on the determination. In contrast, as noted above,
Kogiantis merely describes channel allocation scheduling that preferentially schedules a
particular set of subscribers whose aggregate information rate is highest.

Furthermore, it should be understood that Kogiantis is directed to scheduling channel
allocation at the base station level, i.e., the subscriber station has already been assigned to the
base station, and the scheduler, which is integrated into the base station (see paragraph 26)
determines when a selected set of subscriber equipment corresponding to a set of channel
conditions is to be allowed to convey information over the downlink and uplink channels of the
air interface (N antennas) of the base station. In contrast, as noted above with reference to
Balachandran, claim 1 is direct to a method for selecting at least one base station for
communicating with a terminal in a wireless communication system.

In view of the foregoing, Applicant submits that the Examiner has not properly
determined the differences between the claimed invention and the prior art. Therefore, the
findings of fact as articulated by the Examiner are improper.

Explanation To Support An Obviousness Rejection

As noted above, for the Patent Office to properly combine references in support of an
obviousness rejection, the Patent Office must identify a reason why a person of ordinary skill in
the art would have sought to combine the respective teachings of the applied references. The
examination guidelines indicate that "The key to supporting any rejection under 35 U.S.C. 103 is
the clear articulation of the reason(s) why the claimed invention would have been obvious." The
Court quoting In re Kahn, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated
that " '[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead,

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there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.'" Applicant appreciates that the Examiner has articulated a reason why the claimed invention would have been obvious. However, for reasons detailed below, the Examiner's articulated reason can not be regarded as being valid.

As noted earlier, the Examiner concedes that Ramos does not explicitly disclose a prioritization algorithm that separates candidate base stations into uplink and downlink candidate sets. While Ramos may disclose arranging <u>a single base station candidate list</u> based on uplink, downlink, or both, in order to <u>establish a compromise between uplink and downlink performance</u>, this explicitly teaches away from the present invention, as clearly a compromise between uplink and downlink performance, which is the entire objective of Ramos, is not possible with two separate base station candidate lists for the uplink and the downlink.

The Examiner has relied on Balachandran as having disclosed "dynamic allocation of available <u>resources</u> of [sic] in the uplink and downlink direction independently", and has construed this alleged disclosure as having enabled one skilled in the art to "modify the prioritization algorithm of Ramos, to ... break up downlink and uplink <u>candidate cells</u> in order to maximize the resource pool available for assignment when new data or speech becomes available for transmission." (emphasis added) However, Balachandran is directed to base station level allocation of individual base station channels as either unidirectional uplink or downlink channels, whereas the present invention is directed to <u>base station selection</u>, not merely <u>channel allocation</u>. As such, Applicant respectfully submits that one skilled in the art would see no reason to modify the base station selection method described in Ramos based on the channel allocation method described in Balachandran.

Moreover, Applicant respectfully submits that one skilled in the art would have no reason to expect that "break[ing] up downlink and uplink candidate cells ... [would] maximize the resource pool available for assignment when new data or speech becomes available for transmission". While burst-based independent allocation of uplink and downlink <u>channels</u> according to Balachandran may maximize the <u>channel pool</u> available for assignment when new data or speech becomes available for transmission, one skilled in the art having regard to Balachandran would have no reason to expect that maintaining separate uplink and downlink

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base station candidate set lists would maximize the base station candidate pool available for assignment when new data or speech becomes available for transmission. Accordingly, the Examiner's reason to combine Ramos and Balachandran fails to satisfy the requirements set out in the Supreme Court's ruling in *KSR Int'l v. Teleflex, Inc.*.

The Examiner has also conceded that no combination of Ramos and Balachandran teaches determining a predominant direction of traffic with respect to the terminal. The Examiner has alleged that this feature is disclosed by Kogiantis. As established above, Kogiantis merely describes channel allocation based on measurements of uplink and downlink channel quality, which cannot be construed as determining a predominant direction of traffic with respect to the terminal. As Kogiantis fails to teach this feature of the invention, the Examiner's argument that one skilled in the art would have reason to modify the teachings of Ramos and Balachandran to include this feature in light of the teachings of Kogiantis is clearly in error. As such, the Examiner's stated reason for combining Kogiantis with Ramos and Balachandran fails to satisfy the requirements set out in the Supreme Court's ruling in *KSR Int'l v. Teleflex, Inc.*.

Furthermore, Applicant notes that even if the Patent Office is able to articulate and support a suggestion to combine the references, it is impermissible to pick and choose elements from the prior art while using the application as a template—see *In re Fine*, 837 F.3d 1071 (Fed. Cir. 1988). It is respectfully submitted that incorporating the teachings of Ramos in relating to base station selection using only a single base station candidate list with the teachings of Balachandran in relating to independent uplink and downlink channel allocation together with the teachings of Kogiantis, which do not even disclose the feature alleged by the Examiner (i.e., "determining a predominant direction of traffic with respect to the terminal"), is an attempt to arrive at claim 1 while using the present application as a template. This attempt is flawed because the Examiner's proposed modifications do not account for the fact that Ramos, Balachandran and Kogiantis fail to teach Applicant's claimed "determining a predominant direction of traffic with respect to the terminal", which of course means that they also fail to each or even suggest selecting at least one base station from either the uplink candidate base station set or the downlink candidate base station set based on the predominant direction of traffic with respect to the terminal.

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If one were to use the present application as a template, which is nonetheless improper according to *In re Fine*, one would have to first modify Kogiantis so that it teaches Applicant's claimed "determining a predominant direction of traffic with respect to the terminal", and would have to modify Balachandran so that it teaches Applicant's claimed "storing an uplink candidate set listing at least one candidate uplink base station;" and "storing a downlink candidate set listing at least one candidate downlink base station", as opposed to simply teaching independent allocation of unidirectional uplink and downlink channels. Also, one would have to modifying Ramos so that it teaches "if the predominant direction of traffic is in an uplink direction, selecting at least one optimum base station from the uplink candidate set; and if the predominant direction of traffic is in a downlink direction, selecting at least one optimum base station from the downlink candidate set" as claimed by the Applicant. These numerous modifications cannot be regarded as obvious because the gap between the prior art and the claimed invention is too great. Applicant notes that the aforementioned examination guideline that issued on October 10, 2007 indicates that "the gap between the prior art and the claimed invention may not be 'so great' as to render the [claim] non-obvious to one reasonably skilled in the art." Therefore, the proposed combination of Ramos, Balachandran and Kogiantis cannot render the present application obvious.

In view of the foregoing, Applicant respectfully submits that claim 1 is both novel and inventive over the cited references, both alone and in combination. For at least the reasons provided above, independent claim 9 is also novel and inventive over the cited references.

By virtue of their claim dependencies on one of the independent claims, Applicant further submits that dependent claims 2 to 8 and 10 to 15 are novel, and also inventive, over the cited references for at least the same reasons.

Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 1 to 15 under 35 U.S.C. § 103(a).

In view of the foregoing, early favorable consideration of this application is earnestly solicited. In the event that that the Examiner has concerns regarding the present response, the

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Examiner is encouraged to contact the undersigned at the telephone listed below.

Respectfully submitted,

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